

AMENDMENTS TO THE CLAIMS

1. (currently amended): A microarray reaction device, which device comprises:
 - a) a microarray chip comprising a planar surface and an enclosure attached to said microarray chip to form a plurality of microarray areas on said planar surface; and
 - b) a cover comprising a plurality of projections and a supporting structure that projects from said cover;wherein a plurality of reaction spaces are formed between said microarray areas of said microarray chip and said projections of said cover, wherein the volumes of said reaction spaces are substantially identical and controllable by the height of said supporting structure, the heights of said projections and the areas of said projections, and wherein the thickness of said enclosure is less than the height of said supporting structure.
2. (original): The microarray reaction device of claim 1, wherein the microarray chip is a slide.
3. (canceled)
4. (previously presented): The microarray reaction device of claim 1, wherein the thickness of the enclosure ranges from about 0.05mm to about 50mm.
5. (previously presented): The microarray reaction device of claim 1, wherein the enclosure has a shape selected from the group consisting of a square, a rectangle, a circle, an ellipse, an oval and an irregular shape.
6. (original): The microarray reaction device of claim 1, wherein the cover further comprises a through-hole to deliver fluid into the plurality of reaction spaces.
7. (original): The microarray reaction device of claim 6, wherein the number of the through-holes ranges from about 1 to about 2,500.

8. (previously presented): The microarray reaction device of claim 6, which has identical or different number of the through-holes and the projections.

9. (original): The microarray reaction device of claim 6, wherein the transverse cross-section of the through-holes has a shape selected from the group consisting of a square, a rectangle, a circle, an ellipse, an oval and an irregular shape.

10. (original): The microarray reaction device of claim 6, wherein the through-holes have a diameter ranging from about 0.01 mm to about 100 mm.

11. (original): The microarray reaction device of claim 1, wherein the number of the projections and/or the microarray areas ranges from about 2 to about 2,500.

12. (previously presented): The microarray reaction device of claim 1, which has identical or different number of the projections and the microarray areas.

13. (original): The microarray reaction device of claim 1, wherein the projections and the microarray areas have identical or different shape(s) and/or surface area(s).

14. (original): The microarray reaction device of claim 1, wherein the height of the projections ranges from 0.01mm to 50mm.

15. (original): The microarray reaction device of claim 1, wherein the surface of the projections has a shape selected from the group consisting of a square, a rectangle, a circle, an ellipse, an oval and an irregular shape.

16. (original): The microarray reaction device of claim 1, wherein the surface of the projections has an area ranging from about 0.01 mm² to about 600 mm².

17. (original): The microarray reaction device of claim 1, wherein the plurality of reaction spaces have a height ranging from about 0.001 mm to about 1 mm.

18. (original): The microarray reaction device of claim 1, wherein the plurality of reaction spaces have a volume ranging from about 0.01 mm³ to about 600 mm³.

19. (previously presented): The microarray reaction device of claim 1, wherein the microarray chip, the enclosure, and/or the cover comprises a material selected from the group consisting of a silicon, a plastic, a glass, a ceramic, a rubber, a metal, a polymer, a paper and a combination thereof.

20. (original): The microarray reaction device of claim 1, wherein the cover comprises a plastic.

21. (original): The microarray reaction device of claim 20, wherein the cover is injection molded.

22. (original): The microarray reaction device of claim 20, wherein the plastic is selected from the group consisting of polycarbonate, methylmethacrylate, polystyrene, acrylonitrile-butadiene-styrene (ABS), polyethylene and polypropylene.

23. (original): The microarray reaction device of claim 1, wherein the cover comprises a glass.

24. (original): The microarray reaction device of claim 23, wherein the cover is fabricated by a method selected from the group consisting of gluing, dicing/cutting, slicing, anodic bonding, ultrasonic welding, and a combination thereof.

25. (previously presented): The microarray reaction device of claim 1, wherein the enclosure comprises a rubber attached to a double-coated tape.

26. (original): The microarray reaction device of claim 25, wherein the enclosure is fabricated by stamping.

27. (original): The microarray reaction device of claim 25, wherein the rubber is selected from the group consisting of silicone, caoutchouc, butyl, urethane and neoprene.

28. (previously presented): The microarray reaction device of claim 1, wherein the enclosure comprises a single coated tape.

29. (original): The microarray reaction device of claim 28, wherein the enclosure is fabricated by stamping.

30. (original): The microarray reaction device of claim 1, wherein a reactant capable of binding to an analyte is immobilized in a microarray area.

31-54. (canceled)

55. (currently amended): A microarray reaction device, which device comprises:

a) a microarray chip comprising a planar surface and an enclosure attached to said microarray chip to form a microarray area on said planar surface;

b) a cover comprising a projection and a supporting structure that projects from said cover; and

wherein a reaction space is formed between said microarray area of said microarray chip and said projection of said cover, wherein the volumes of said reaction space is controllable by the height of said supporting structure, the height of said projection and the area of said projection, and wherein the thickness of said enclosure is less than the height of said supporting structure.

56-58. (canceled)